

SCOPE OF CLAIMS

1. A solid-state imaging apparatus comprising:

5 a photosensitive section comprising a semiconductor substrate of a first conductivity type, and a plurality of second conductivity type semiconductor regions arrayed in a two-dimensional pattern on one side of the semiconductor substrate, wherein the semiconductor substrate and each second conductivity type semiconductor region constitute a pn junction to function as a photodiode; and

10 an electroconductive member provided so as to cover at least the pn junction portions exposed on the one side of the semiconductor substrate,

15 wherein the electroconductive member is connected to a fixed potential, or is grounded.

2. The solid-state imaging apparatus according to Claim 1, wherein the electroconductive member is of grid shape when viewed from a direction of incidence of light to the photosensitive section, and is provided so as to cover the pn junction portions exposed on the one side of the semiconductor substrate and portions between the second conductivity type semiconductor regions adjacent to each other.

20 3. The solid-state imaging apparatus according to Claim 1, wherein the photosensitive section further comprises an isolation region formed between the second conductivity type semiconductor regions adjacent to each other, and

25 wherein the electroconductive member is electrically connected to the isolation region.

4. The solid-state imaging apparatus according to Claim 1, further comprising:

signal lines for readout of outputs from the photodiodes, which are electrically connected to the photodiodes;

a switch group consisting of a plurality of switches for controlling electrical connection and disconnection between each photodiode and the signal line in each column of the photodiodes; and

wires connected to control terminals of the respective switches forming the switch group, and arranged to supply a scan signal to turn each switch off or on in each row of the photodiodes, to the control terminals,

wherein the wires are located above the electroconductive member.

10 5. A solid-state imaging apparatus comprising:

a photosensitive section comprising a semiconductor substrate of a first conductivity type, and a plurality of second conductivity type semiconductor regions arrayed in a matrix of M rows and N columns on one side of the semiconductor substrate, wherein the semiconductor substrate and each second conductivity type semiconductor region constitute a pn junction to function as a photodiode;

first wires provided in the respective columns;

a first switch group consisting of a plurality of switches for connection between each photodiode and the first wire in each column;

20 a vertical shift register for outputting a vertical scan signal to open and close each switch forming the first switch group, in each row;

second wires for connecting control terminals of the respective switches forming the first switch group, to the vertical shift register in each row;

25 a second switch group consisting of a plurality of switches for connection between each first wire and a signal output line;

a horizontal shift register for outputting a horizontal scan signal to open and close each switch forming the second switch group, in each column; and

5 an electroconductive member provided so as to cover at least the pn junction portions exposed on the one side of the semiconductor substrate,

wherein the electroconductive member is connected to a fixed potential, or is grounded.

6. The solid-state imaging apparatus according to Claim 5, wherein the electroconductive member is of grid shape when viewed from a direction of incidence of light to the photosensitive section, and is provided so as to cover the pn junction portions exposed on the one side of the semiconductor substrate and portions between the second conductivity type semiconductor regions adjacent to each other.

7. The solid-state imaging apparatus according to Claim 5, wherein the photosensitive section further comprises an isolation region formed between the second conductivity type semiconductor regions adjacent to each other, and

wherein the electroconductive member is electrically connected to the isolation region.

20 8. The solid-state imaging apparatus according to Claim 5, wherein the second wires are located above the electroconductive member.

9. A solid-state imaging apparatus comprising:

25 a photosensitive section comprising a semiconductor substrate of a first conductivity type, and a plurality of second conductivity type semiconductor regions arrayed in a two-dimensional pattern on one side of the semiconductor substrate, wherein the semiconductor substrate and each second

conductivity type semiconductor region constitute a pn junction to function as a photodiode; and

an electroconductive member for discharging a charge generated in a region except for the photodiodes, to the outside.

5 10. The solid-state imaging apparatus according to Claim 9, wherein the electroconductive member is provided above the pn junction portions so as to cover at least the pn junction portions exposed on the one side of the semiconductor substrate, and is connected to a fixed potential, or is grounded.

10 11. A radiographic imaging apparatus comprising:
the solid-state imaging apparatus as set forth in any one of Claims 1 to 10; and
a scintillator for converting radiation to visible light, which is provided so as to cover the plurality of photodiodes.